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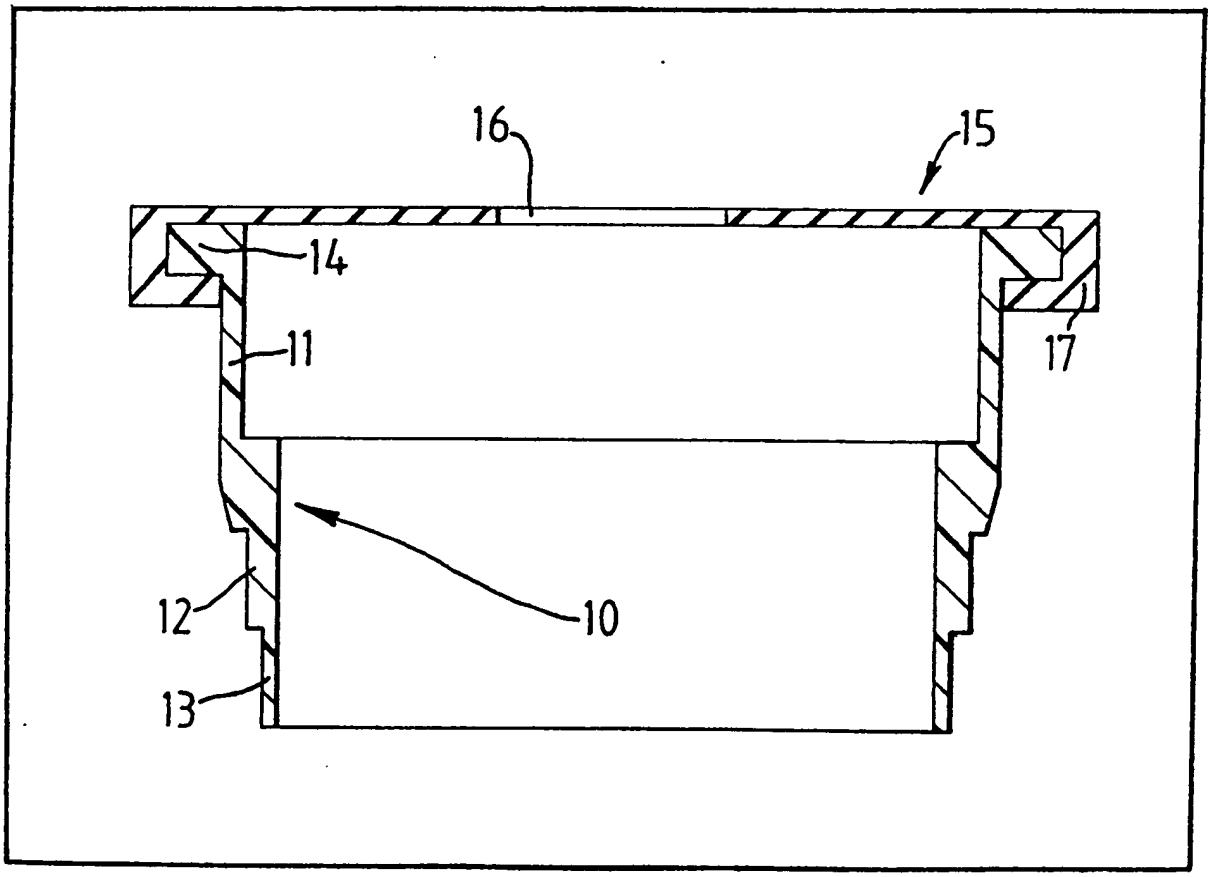
(54) Adaptor for pipe connections

(57) An adaptor for connecting a first pipe to a second pipe of different diameter, being particularly suitable for use with plastics drainage pipe systems, comprises an annular spigot portion 13 which can typically fit into either the free end of a pipe or a pipe socket, and an elastomeric disc 15 extending across the end of the spigot portion and having a suitably sized orifice 16 into which a second pipe can be urged to provide a fluid-tight joint.



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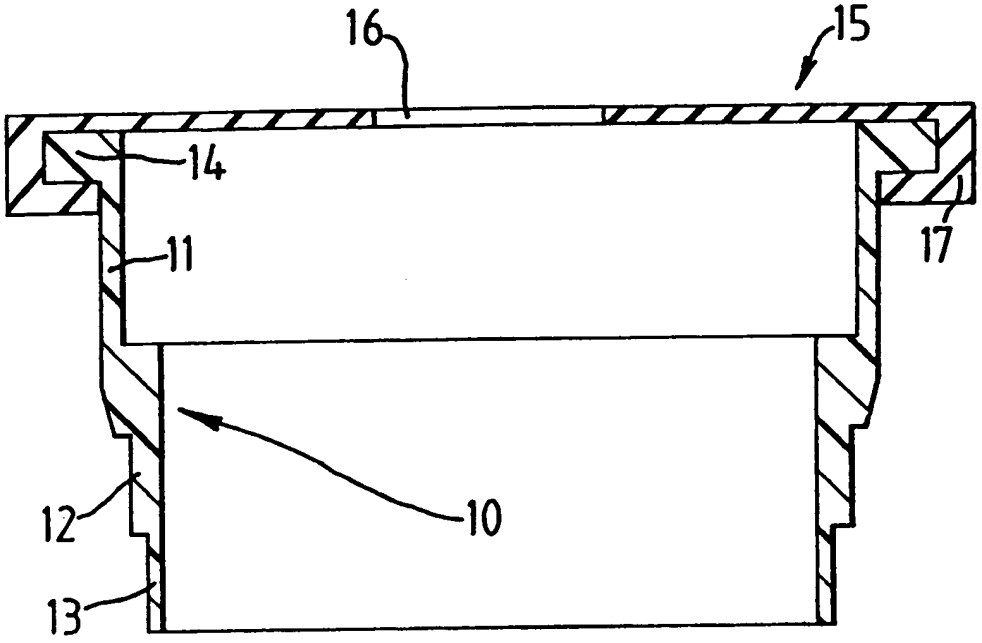
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SPECIFICATION

Adaptor for pipe connections

This invention relates to adaptors for pipe connections, and in particular to adaptors suitable for use with plastics drainage pipe systems.

According to one aspect of the invention we provide an adaptor for connecting a first pipe to a second pipe, said adaptor comprising a rigid annular spigot portion adapted to fit into a free end of said first pipe, and an elastomeric member extending across the end of the spigot portion distant from the first pipe and adapted to fit in a fluid-tight manner over said end of the spigot portion to be retained by an outwardly extending abutment on the spigot portion, the elastomeric member having an orifice into which the second pipe may be urged to provide fluid-tight connection between the adaptor and the second pipe.

By fluid-tight, we mean secured against fluid leakage under normal pressures and vacuums to be expected in drainage and soil pipe systems.

The spigot portion of the adaptor is suitably provided with an elastomeric sealing ring which extends around an extension of the spigot portion and which provides a fluid-tight connection between the spigot portion and the first pipe when the spigot portion is inserted into the free end of said pipe.

The spigot portion may also be adapted to fit into a pipe socket as well as into a pipe. In this case the external diameter of part of the spigot portion is such that a fluid-tight connection is obtained between a sealing ring retained in the pipe socket and the spigot portion.

The elastomeric member may be of generally disc-shaped configuration. The orifice preferably may have its centre co-incident with the centre of the disc, or alternatively may be generally located in the central region of the disc. More than one orifice may be provided, in which case the orifices could be located symmetrically in the disc.

The annular spigot portion is suitable made of thermoplastics material eg PVC and the adaptor may be used with PVC pipe systems. The diameter of the orifice is selected such that it is suitable to provide a fluid-tight connection between itself and a pipe to be inserted in the orifice. The flexibility and resilience of the elastomeric member is suitably such that it will provide a fluid-tight seal between second pipes of a range of sizes, which second pipes need not necessarily be circular but could for example be square in cross-section.

One embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawing which shows in cross-section an adaptor according to the invention.

An annular rigid PVC moulding forms a spigot portion 10. This spigot portion is for use with nominal 110 mm size PVC pipe systems ie for use with pipes of an outside diameter of 110 mm and an inside diameter of 103—104 mm. The pipe sockets used with 110 mm pipe typically have an internally-retained sealing ring adapted to provide a fluid tight seal with 110 mm outside diameter pipe.

The spigot portion 10 comprises a first annular portion 11 of outside diameter of 110 mm, a second annular portion 12 of outside diameter of 102 mm and an annular extension 13 from the second annular portion 12 of outside diameter 97 mm. At the transition from 110 mm to 102 mm outside diameter, the first annular portion is chamferred on its outside diameter to ease the insertion into a pipe socket (not shown). A shoulder is provided at the transition from 102 mm to the extension of 97 mm outside diameter, which shoulder in use retains a sealing ring (not shown) when the spigot portion 10 is inserted into the free end of a pipe of 110 mm nominal size. The extension 13 provides a lead-in for use when the spigot portion 10 is to be inserted into 110 mm nominal size pipe.

The first annular portion 11 of spigot portion 10 carries an annular outwardly-directed abutment 14 at its end distant from the second annular portion 12. The overall length of the spigot portion 10 is such that when inserted into a socketed pipe, an expansion gap is provided between the extension 13 and the termination of the "belled" socket. The interior diameter of the spigot portion 10 is stepped outwardly in the region of the first annular portion 11 for the purpose of minimising material, but consistent with providing the necessary strength of the spigot portion 10.

Around the annular abutment 14 is fitted the perimeter of a generally disc-shaped elastomeric member 15 which has a centrally located orifice 16 of 32 mm diameter. To enable fluid-tight fitting of the elastomeric member 15 to the socket portion 10, the elastomeric member 15 has a re-entrant portion 17 around its perimeter which fits tightly over the annular abutment 14 and is retained by said abutment 14. The thickness dimension of the side of the re-entrant portion 17 which fits over the abutment 14 can be used to ensure the correct expansion gap when the spigot portion 10 is inserted into a socketed pipe. The material from which the elastomeric member is made is E.P.D.M. Rubber and its Shore value is selected so that the perimeter of the orifice 16 will receive and fit tightly around a circular pipe of 32 mm, 40 mm, 54mm, 63 mm, 68 mm, 75 mm or 82 mm diameter or a 68 mm square section pipe.

It should be noted that the dimensions of the spigot portion 10, the elastomeric member 15 and the orifice 16 can be altered to suit the particular size of pipe systems with which the adaptor is to be used.

Claims

1. An adaptor for connecting a first pipe to a second pipe, said adaptor comprising a rigid annular spigot portion adapted to fit into a free end of said first pipe, and an elastomeric member

extending across the end of the spigot portion distant from the first pipe and adapted to fit in a fluid-tight manner as hereinbefore defined over said end of the spigot portion to be retained by an outwardly extending abutment on the spigot portion, the elastomeric member having an orifice into which the second pipe may be urged to provide fluid-tight connection between the adaptor and the second pipe.

2. An adaptor as claimed in Claim 1 in which the spigot portion is also adapted to fit into a pipe socket, the external diameter of part of the spigot portion being such that a fluid-tight connection is obtained between a sealing ring retained in the pipe socket and the spigot portion.

3. An adaptor as claimed in Claim 1 or Claim 2 in which the elastomeric member is of generally disc-shaped configuration.

4. An adaptor as claimed in Claim 3 in which the orifice in the elastomeric member has its centre co-incident with the centre of the disc.

5. An adaptor as claimed in Claim 3 in which the elastomeric member has a plurality of orifices symmetrically located in the disc.

6. An adaptor as claimed in Claim 1 in which the spigot portion is provided with an elastomeric sealing ring which extends around an extension of the spigot portion to provide fluid-tight connection between the spigot portion and the first pipe when the spigot portion is inserted into the free end of said pipe.

7. An adaptor as claimed in any preceding Claim in which the flexibility and resilience of the elastomeric member are such that it provides a fluid-tight seal between itself and a range of second pipes, each of which have different external dimensions.

8. An adaptor as hereinbefore described with reference to and as shown in the accompanying drawings.

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